A Document Authoring System for Credible Enterprise Reporting with Data Analysis from Data Warehouse

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A Document Authoring System for Credible Enterprise Reporting with Data Analysis from Data Warehouse

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Introducing my university…

- Kyushu University
  - National university corporation.
  - People
    - 18,588 students
    - 2,610 bureau staff
    - 2,193 faculty staff
    - 2,253 research staff
  - total: around 24,000 persons
Introduction of myself …

- Working in the **Institutional Research (IR)** Office of Kyushu University,

- To assist creating self-assessment reports of the university.
- To collect evidential data (textual and numerical) for the self-assessment reports.
- To analyze management information of the university.
Introduction of myself ...

- My missions are:

  ✓ Developing data warehouse and databases for IR.
  ✓ Creating tools and environment of IR analysis.
  ✓ Creating digital documents from self-assessment reports.
What is the institutional research?

Role
- Collecting institutional (university and college) information.
- Reporting analysis of those information to...
  - the provosts and trustees (internal report)
  - the government (external report).
- Assisting creation of self-assessment reports.

Where is it found?
- In flagship universities of US and Netherlands.
- Some are found in Japan recently.
Motivation and Background

- Two main mandatory reports are obliged Japanese national universities.
  (University Evaluation)

1. **Certified evaluation and accreditation**
   (accreditation evaluation)

2. **National university corporation evaluation**
   (corporation evaluation)
Motivation and Background

- **Aim of Accreditation Evaluation**
  - To check whether the university meets the standard of educational institutions every 6 years.

- **Examples of evaluation criteria**
  - Number of students, faculties and staff
  - Facilities for education
    - lecture room, laboratory, library and IT connection

- **Without Accreditation Evaluation, the university could not give certifications and degrees to students.**
Motivation and Background

- **Aim of Corporation Evaluation**
  - To check the university attains their mid-term objectives and plans.
  - Mid-term = 6 years
  - Without corporation evaluation, the government would not give grants to the university.
Motivation and Background


<table>
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<th>Number of institutions</th>
<th>Number of criteria</th>
<th>Total Pages</th>
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<tr>
<td>Research</td>
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<td>5</td>
<td>311</td>
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</tbody>
</table>

This report was all in the form of Microsoft word document. We need a Document Authoring System.
Purpose of the article

- To develop a Document Authoring System
- Going well on the both evaluation

- Cooperating with data warehouse of institutional information.
Purpose of the article

- To develop a **Document Authoring System**
  
  ✓ Going well on the both evaluation
  
  "Formats of these reports are different, but there are common criteria and standards."

  ✓ Cooperating with data warehouse of institutional research.

  "We propose a data warehouse with Web API."
What are problems?

1. Creating different reports separately causes inconsistency.
   ✓ There are many common criteria.

2. Changeability is required to our system.
   ✓ The style of reports would be changed in the future.
What are problems?

3. How does our system cooperate with the data warehouse.
   ✓ We introduce a Web API to the data warehouse.

4. We had to create reports from scratch!
   ✓ No structured data, no ontology.

Data analysis from Data Warehouse!
Solution for problem 1 & 2

Accreditation evaluation
1. Objectives
   1. Dept. Law
   2. Dept. Agriculture
   ...
2. System
   1. Admission
      1. Dept. Law
      2. Dept. Agriculture
      ...
   2. Curriculum
      1. Bachelor
         1. Dept. Law
         2. Dept. Agriculture
      2. Master
      ....

Corporation evaluation
1. Dept. Law
   1. Mid-term plans
      1. objectives
   2. Education
      1. Admission policy
      2. Curriculum
2. Dept. Agriculture
   1. Mid-term plans
      1. objectives
   2. Education
      1. Admission policy
      2. Curriculum
Solution for problem 1 & 2

Accreditation evaluation

1. Objectives
   1. Dept. Law
   2. Dept. Agriculture
   ...

2. System
   1. Admission
      1. Dept. Law
      2. Dept. Agriculture
      ...
   2. Curriculum
      1. Bachelor
         1. Dept. Law
         2. Dept. Agriculture
      2. Master
      ....

Corporation evaluation

1. Dept. Law
   1. Mid-term plans
   ...
   1. Owner: “Dept. Law”
   2. title: “Admission”
   3. self-assessment comment
   4. evidence
      1. numerical data from data warehouse
      2. text data document attachment
Demo
Conclusion

- We developed a document authoring system.
  ✓ Credible report creation.
  ✓ Cooperating with data warehouse via Web API.
  ✓ Semantic processing has just begun.

Problems

- Flexibility of report components.
  • Going well on the context of each report.
- Data operation on the system.
  • Cross tabulation, etc.